THE EFFECTS OF A SELF-EVALUATION MULTIMEDIA COURSEWARE ON LEARNING RESTRICTED ARABIC CONSONANTS AMONG NON-ARABIC SPEAKERS : A CASE STUDY

By

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KESAN KOSWER MULTIMEDIA PENILAIAN KENDIRI TERHADAP PEMBELAJARAN HURUF-HURUF KONSONAN TERHAD BAHASA ARAB DALAM KALANGAN PENUTUR BUKAN ARAB : KAJIAN KES

ABSTRAK

Kajian ini memfokuskan kepada kesan koswer multimedia penilaian kendiri dalam pembelajaran sebutan huruf-huruf konsonan Arab terhad (HKAT) di kalangan penutur bukan Bahasa Arab (PBBA). Para pengkaji sebelum ini mendapati bahawa PBBA menghadapi masalah dan gagal menyebut HKAT dengan betul apabila mereka mempelajari bahasa Arab. Masalah ini berpunca daripada beberapa sebab termasuklah kerana ketiadaan HKAT tersebut dalam bahasa Inggeris, dan keperluan menggunakan sistem artikulasi pelajar bagi menghasilkan sebutan baru yang tidak terdapat dalam bahasa ibunda mereka. Kajian ini menggunapakai pendekatan kajian kes yang melibatkan empat orang pelajar dewasa PBBA dari sebuah kolej awam di Emiriah Arab Bersatu, dan mereka dipilih secara rawak daripada kawasan geografi berbeza. Keempat-empat pelajar tersebut menggunakan pembelajaran kendiri dengan berpendekatan penilaian kendiri, di mana satu koswer multimedia untuk mengajar mereka untuk menyebut HKAT dengan betul telah dibangunkan. Para pelajar berkenaan diuji dengan ujian pra sebelum mengikuti pembelajaran melalui koswer tersebut bagi mengukur tahap penyebutan HKAT mereka. Mereka merekodkan kesemua aktiviti pembelajaran mereka dengan menggunakan perisian Camtasia Studio, dan seterusnya menduduki ujian pasca selepas mengikuti pembelajaran tersebut. Data yang dikutip dari ujian pra, ujian pasca, video yang dirakam serta temubual telah dianalisis menggunakan kaedah kualitatif dan kuantitatif. Dapatan menunjukkan bahawa koswer multimedia yang dibangunkan dengan pendekatan penilaian kendiri adalah efektif, berguna serta meningkatkan prestasi pembelajaran

pelajar dari aspek penyebutan HKAT mereka. Dapatan juga menunjukkan corak dan strategi berbeza yang diambil oleh para pelajar, dan bagaimana latarbelakang serta pengalaman mereka telah mempengaruhi strategi pembelajaran yang diambil. Tambahan pula, dapatan turut menunjukkan bahasa ibunda mereka telah mempengaruhi penyebutan HKAT tersebut, dan bagaimana bahasa ibunda yang berbeza boleh mempengaruhi tahap kesukaran pembelajaran penyebutan HKAT. Dapatan-dapatan kajian ini mungkin boleh digeneralisasikan terhadap pelajar dewasa lain yang ingin mempelajari bahasa Arab sebagai bahasa kedua dalam 17 kampus berbeza bagi kolej swasta tersebut di negara Emiriyah Arab Bersatu tersebut. Ia juga boleh digeneralisasikan kepada orang dewasa yang ingin mempelajari penyebutan HKAT yang betul.

THE EFFECTS OF A SELF-EVALUATION MULTIMEDIA COURSEWARE ON LEARNING RESTRICTED ARABIC CONSONANTS AMONG NON-ARABIC SPEAKERS: A CASE STUDY

ABSTRACT

The current study focuses on the effects of self-evaluation multimedia courseware in learning the pronunciation of the Restricted Arabic Consonants (RACs) by Non Arabic Speakers (NASs). Studies showed that NASs face difficulties and cannot pronounce the RACs properly when they learn Arabic language. The problem is due to different reasons including the RACs are not available in the English language, and the need to learn how to use new parts of the learner's articulation system to produce the new sound which are not available in the learner's mother tongue. This research uses a case study approach with four adult NAS learners from a government college in the United Arab Emirates and they were selected randomly from different regions of the world. The four learners used a self-learning with a self-evaluation approach and a specially developed multimedia courseware to teach themselves how to pronounce the RACs correctly or in acceptable manner. The learners had a pretest to evaluate their levels in the pronunciation of the RACs before starting the learning process. Learners recorded all their learning activities by using the Camtasia Studio software and were post-tested after completing their training. The collected data in the form of pretest, posttest, recorded videos and the interviews were analyzed using both qualitative and quantitative techniques. The results showed that the developed multimedia courseware with the self-evaluation approach was effective, useful and had an excellent improvement in the learners' RACs pronunciation levels. The findings also

indicate the different patterns and strategies used by the learners, and how their background and experiences affected their learning strategies. In addition, it also showed the effect of the learner's mother tongue on learning the RACs and how the different mother tongues can affect the difficulty level of learning the correct pronunciation of RACs. The results of this work may be generalized to other adult learners who want to learn the Arabic language as a second language in the 17 different campuses of the government college in the United Arab Emirates. The findings may also be generalized to any adult who wants to learn the proper or acceptable way of pronouncing the RACs.

CHAPTER ONE

INTRODUCTION

1.1 Overview

The world today has become a global village. Under such circumstances, learning a second language is increasingly becoming important and advantageous. In the learning process, proper pronunciation is crucial and cannot be neglected. The production of language depends on whether speakers know how and what to say. Pronunciation is the fundamental element of speaking. Specifically, pronunciation refers to the way in which a language is spoken (Hornby, 1987).

To learn a second language, learners must use one or more strategies depending on their needs, backgrounds, and personal situations. Second language strategies are any strategy that can facilitate the learning and use of a second language. The second language learning strategies are thoughts, steps, behaviors, or actions used to learn a language (Oxford, 2003). Numerous second language learning strategies are available; however, these learning strategies cannot be identified as bad or good because their performance depends on their benefit and usefulness to learners' goals and purposes (Oxford, 2003).

Self-evaluation, self-assessment, and self-testing are different names of the same concept. Self-evaluation can be defined as students' way of comparing the quality of their work against predefined criteria to improve and enhance their level (Rolheiser & Ross, 2001). Self-evaluation is a useful technique in any learning

environment. An important outcome of self-evaluation is the increased confidence and comfort levels of learners, which can be very useful in their mastery of tasks. Self-evaluation has positive effects on students' motivation and outcomes, especially when students perform it to monitor their work and to improve and reach their goals. Self-assessment plays an important role in controlling learners' learning processes and in dividing the resources available in and outside the class (W.M.Yang & Xu, 2008).

Strategy alone is not enough to learn a second language. One must have access to a good source of well-prepared materials and utilize available technology resources to teach learners a second language. An example of technology resources that can be used in learning second language is multimedia. Multimedia has recently become one of the important tools in the field of education, especially in language learning. When used in foreign language learning, multimedia tools make lessons lively and interesting and thus provide learners with a different experience (Dovedan, Seljan, & Vučković, 2002).

The computer-based interactive multimedia (CBIM) system delivers computer-assisted instruction and interactive multimedia that enrich presentations. Thus, the application of this system is more advantageous than the traditional learning process. The CBIM system provides learners with a suitable environment that can meet their needs (Chang & Lehman, 2013).

Different languages have varying letters and sounds, the similarities and differences of which vary from one language to another. The Arabic and English

languages have certain similarities and differences. In terms of sound, nine sounds in the Arabic language are unavailable in the English language; these sounds/letters are ح خ ص ض ط ظ ع غ ق (Javed, 2013). Non-Arabic speakers (NASs) find these nine letters difficult to pronounce because of various reasons such as the unavailability in other languages and to the nature of the vocal system honed by learners (Odisho, 2005).

This research investigates the case of four adult learners from different regions who use the developed multimedia courseware and a self-learning with self-evaluation approach to teach themselves the proper or acceptable way of pronouncing the nine Arabic letters. The different patterns of strategies used by the learners and the effect of their mother tongues on learning the pronunciation of the nine Arabic letters are also studied.

1.2 Background to the problem

"Sound is an articulation made by the vocal apparatus or the distinctive character of such an articulation" (Morris, 1969). Teaching sounds and pronunciation is extremely important and represents the basic principle of teaching any language. This approach enables a learner to know the letters first and eventually read and write them. Second language learners cannot understand a certain language and master the letters and words unless they know how to pronounce them properly or in an acceptable manner. For example, Quran readers who follow "Ahkam Altajweed" are known for their mastery of pronunciation, particularly when reciting the Quran (Alwayee, 1983).

Arab scholars have long emphasized the science of sound. Alkhaleel bin Ahmed (175 Hijri) focused several of his work on sounds and articulation, which were also explored by his student, Sybawyah. Tajweed scholars authored works on sound and explained the proper way to pronounce letters. Quran readers in particular have contributed significantly to the Arabic language by passing on the Arabic sounds from one generation to the next (Alhamad, 2007).

The interest in learning the Arabic language is currently increasing in many parts of the world. Fathi reported the Arabic language as one of the top 10 popular foreign languages studied in American universities (Fathi, 2010). Since 1968, the Arabic language has been one of the five official working languages of the UNESCO (UNESCO, 1968).

The United Arab Emirates (UAE) comprises one of the most diverse populations in the world; the latest census shows that around 20% of the 8.19 million people residing in the UAE are natives (UAE Government, 2010). Therefore, 80% of the population is composed of people from around the world who speak languages other than Arabic, including English, Urdu, and Hindi. In this scenario, the proportion of NASs is large. In March 2008, the UAE government issued a decree making the Arabic language the official language to be used in all the letters and documents of the ministries and other federal organizations; this initiative further explains the increase in the number of people who are required to learn Arabic (UAE Government, 2008). In the last few years, a number of courses that teach Arabic as a second language have been made available in different institutes and universities in

the UAE to address the increasing number of people who want to learn Arabic as their second language.

The Higher Colleges of Technology (HCT) was established in 1988 with four founding colleges for UAE nationals only; with 17 branches spread out across the UAE today, the HCT has become the largest higher educational institution in the country (HCT, 2014a). In the academic year 2014–2015, the HCT employed more than 2,000 faculty and staff members, which represented over 50 different nationalities (HCT, 2014b). A lot of the faculty and staff members who are working in the HCT today are NASs, and all of the students are UAE citizens. When the new non-Arabic-speaking employees began their careers at the HCT, they were provided with specially tailored classes to allow them to become familiar with the new Arabic context; these classes included an introduction to common Arabic words (AlOmari., 2008).

The researcher of the present work has been teaching the Arabic language to NASs since 2004 through different classes and short courses and using different tools and technology resources. According to the researcher, the NASs enrolled in various classes are challenged by the pronunciation of words that contain any of the nine letters mentioned previously (ح خ ص ض ط ظ ع غ ق). A discussion with the different learners of other nationalities showed that the problem in the pronunciation is due to several reasons. For instance, all nine Arabic letters, or most of them, are unavailable in the learners' first languages or mother tongues. In addition, their articulation system is not ready to pronounce the new letters or sounds because they are adults who have been using their own articulation system for many years. Hence they are

unaware of how to produce the nine letters using their established personal articulation system.

Nevertheless, these learners showed eagerness to learn Arabic as a second language. Their reasons vary including their desire to communicate with UAE nationals, learn more about the Arab culture, greet people during significant events such as Ramadan and Eid, understand and comprehend Arabic words when they listen to Arabic music and entertainment, and understand some of the students who communicate in Arabic in class.

The difficulties in learning other languages are due to several factors. These factors include the age of the learner, the environment where the learner is learning the foreign language, the similarities and differences between the languages, and the reading and writing of the new language, including the pronunciation of sounds; for example, learning Farsi or Urdu is easier than learning Chinese for Arab learners (Alsrhid, 2013). Learning the Arabic language is difficult and challenging for NASs, especially English native speakers, because of phonological and morphological complexities (Zouhir, 2013).

Unlike the English language, in which a sound can consist of one or more letters, the Arabic language comprises letters, each of which has only one sound; for example, the sound “f” in the English language can be “f” in “far,” “ph” in “elephant, or “gh” in “enough” (Kamal, 1990).

The sound systems of the Arabic and English languages have certain similarities and differences; a total of 18 consonants are common in both systems, with 10 consonants restricted to the Arabic language and 5 consonants (P, G, Ch, V, S) restricted to the English language (AlKhuli, 2012).

The difficulties in pronouncing the nine letters are due to a number of reasons. These letters are unavailable in the mother languages of learners. These letters also use different articulations that are unavailable in learners' original languages. Moreover, the vocal and language auditory systems used to pronounce these different vocalizations are honed through years of practice. Hence, pronouncing the nine letters is challenging for NASs. Problems also emerge when NASs begin to learn new vocal articulations to produce new sounds (Odisho, 2005).

Four of the nine Arabic consonants, namely, ص ض ط ظ, are unavailable in any other language; these consonants are thus very difficult to pronounce for NASs and present a real challenge in the development of an Arabic speech recognition system among learners (Alsabaan, Alsharhan, Ramsay, & Ahmad, 2012). The most prevalent problem faced by NASs who are learning the pronunciation of Arabic letters revolves around developing the ability to pronounce the nine letters, namely, ح خ ص ض ط ظ ع غ ق. These nine letters are identified as Restricted Arabic Consonants (RACs). The problem of pronouncing the RACs is not only faced by English speakers but also by French, Italian, Australian, and other speakers as their languages differ greatly, particularly in terms of the presence of RACs (Khasawneh, 2008).

Touaimah contended that one of the major problems in learning Arabic as a second language is the linguistic aspect, including the sound and pronunciation of Arabic letters and the sounds that are unavailable in the mother languages of learners (Touaimah., 1989).

1.3 Problem Statement

Learning sounds in other languages is one of the main difficulties faced by foreign language learners (Alsrhid, 2013). For NASs, learning the Arabic language, learning Arabic sounds is an important issue, especially because the sounds of Arabic letters are complex (Katbi, 2012). One of the differences between the Arabic language and the English language is that certain sounds are available in one language and is unavailable in the other (Amer, 2012).

The Arabic language has nine letters or sounds (ح خ ص ض ط ظ ع غ ق) that are unavailable in the English language and thus difficult to pronounce for NASs (Javed, 2013). These nine letters present a challenge or difficulty to any NAS because they are unavailable in other languages (Jameel, 2010). This research aims to investigate the main problem faced by NASs at Fujairah Colleges in the UAE when learning the Arabic language. This problem relates to the pronunciation of the nine Arabic letters (ح خ ص ض ط ظ ع غ ق) that have no equivalent letters or sounds in the English language. These letters can be described as RACs relative to the English language (Eid, 2006).

The nine RACs represent about one-third of the characters of the Arabic alphabet. Despite the difficulties faced by NASs in pronouncing these nine letters, most of the curricula and books that are provided to learners do not pay close attention to these letters, with their focus directed toward the rest of the Arabic letters and with their discussion only stating that these letters are different in their pronunciations (Jameel, 2010).

A review of a list of multimedia courseware currently available to teach Arabic language to NASs was conducted. These multimedia courseware were evaluated in accordance to several criteria. These multimedia courseware should include a special section to teach the pronunciation of Arabic letters in addition to the Restricted Arabic Consonants, dedicated animations to explain the process of pronouncing the RAC and show the movement of the tongue inside the mouth and where these letter are produced, and not use the three letters/sounds way to teach the pronunciation of one letter like Ka Aa Ff for teaching the letter ق.

A review of the multimedia courseware currently available at the time of writing this thesis, as a set of tools for teaching the Arabic language to NASs, found that there is no multimedia courseware that meets all the criteria that was required. The review demonstrated the need to develop a multimedia courseware to teach the pronunciation of RACs to NASs and to fill this gap.

This research focuses on adult learners who have developed their own language systems. With these language systems already ingrained in adult learners of the Arabic language, they could become a hindrance in the learning process for

learning Arabic for these learners. In addition, these learners are already cognitively mature and tend to prefer using their own language systems; such preference becomes a problem as they begin learning the Arabic language (Wahba, Taha, & England, 2013.).

In many cases, adult learners who do not have the resources to attend classes apply a self-learning method to acquire knowledge and skills, including speaking a second language. Research by Wen-ming and Xiao –shen (2008) found that using self-assessment is considerably effective in mastering any second language. This research investigates adult learners who use a self-learning approach with self-evaluation and the developed multimedia courseware to teach themselves the appropriate or acknowledged by experts as acceptable pronunciation of the RACs without assistance from a teacher throughout the whole learning process.

1.4 Research Objectives

This research aims to study the effects of a self-evaluation multimedia courseware on learning the RACs among NASs. The different patterns and strategies used by these adult learners and the effects of the learners' mother tongue on learning the pronunciation of the RACs are also investigated. Thus, the objectives of this research are as follows:

1- To design and develop a multimedia courseware for teaching the RACs to NASs
2- To investigate the extent of improvement in learners' levels of pronunciation by using the self-learning with self-evaluation approach
3- To explore the different patterns and strategies used by adult learners
4- To determine the effects of the learners' mother tongue on learning the pronunciation of the RACs

1.5 Research Questions

This research aims to study the effects of a self-evaluation multimedia courseware on learning the RACs among NASs. The different patterns and strategies used by adult learners and the effects of the learners' mother tongue on learning the pronunciation of the RACs are also investigated. Hence, this research aims to answer the following questions:

1- Can the developed multimedia courseware be effectively used to teach the RACs to NASs?
2- Does the pronunciation of the RACs by NASs improve with the self-evaluation method?
3- What patterns and strategies are used by adult learners during engagement?
4- Does the mother tongue of learners affect their learning of the pronunciation of the RACs?

1.6 Significance of the Study

This research is expected to address the problem of pronouncing Arabic letters or sounds that have no matches in the English language, the effects of self-evaluation multimedia courseware on learning the RACs, the different patterns of listening and pronouncing strategies used by learners, as well as the effects of learners' mother tongues on learning the correct and acceptable pronunciation of the RACs.

The results of this work may be generalized to other adult learners who want to learn the Arabic language as a second language in the 17 different campuses of the HCT in the UAE. The findings can also be generalized to any adult who wants to learn the proper or acceptable way of pronouncing the RACs. The faculty members, staff members, and employees of the different universities in the UAE, who are interested in learning Arabic as a second language, as well as the other employees of private organizations in Fujairah and the other Emirates, can equally benefit from the results of this study.

1.7 Theoretical Framework

The theoretical framework covers Kolb's (1984) experiential learning theory (ELT) learning construct that includes three development stages and a four-stage learning cycle. The theoretical framework also includes Mayer's (2003) cognitive theory of multimedia learning (CTML), the three cognitive processes and assumptions when using multimedia in the learning process, the learner systems that

include the verbal system and the visual system, and the different types of memory. In addition to ELT and CTML, Bandura's (1986) social cognitive theory is also incorporated in this framework.

Table 1.1 *Theoretical Principles.*

Principle	Theoretical Principle
- Adults learn pronunciation of RACs by NASs.	- Kolb's Experiential Learning Theory (ELT)/ Learning Construct. - Adult Learning Theory. - Mayer's Cognitive Theory of Multimedia Learning (CTML).
- Develop multimedia courseware to pronounce RACs.	- Mayer's Cognitive Theory of Multimedia Learning (CTML).
- Self-learning with self-evaluation.	- Bandura's Social Cognitive Theory.

There are different theories available for second language acquisition, like Stephen Krashen's Theory, where second language acquisition develops through five stages (Hong, 2008). Behaviorist Theory (BT), which describes the learning of the second language as a simulation to what they hear and that improvement comes from repetition (Hatameleh, 2006). Skill Acquisition Theory (SAT), where language acquisition is similar to learning other skills and could be acquired through practice. Social Interactions Theory (SIT), which considers that the basis of learning the language is through social interactions. SIT consists of three parts: Importance of culture, the main role of the language, and the Zone of Proximal Growth and Development (ZPD) (Chomsky, 1969).

The participants in this research are adults ~~only~~, they have their own experiences, learning styles and strategies to learn, which differ from the children or early learners. Therefore Theories such as Krashen's theory and Social Interactions Theory (SIT) are unsuitable for the adult learners, while the others like Behaviorist Theory (BT) and Skill Acquisition Theory (SAT) are more closely related to the adult learners in terms of repetition and practice.

The four-stage cycle of Kolb's Experiential Learning Theory (ELT) starts with using the senses and feel, then watching an experience and reflecting on it, then integrating the ideas into logical theories, and finally using what was learned in the previous stages and applying it. The previous stages are very similar to the way that learners learned their first language. Kolb's model (1984) is chosen as the basis of this research because of the nature and nurture style and the type of the learners who are participating in this research; all the learners are adults and are required to use the multimedia courseware to teach and evaluate themselves.

1.7.1 Adult Learning Theory

Adult learning is a cognitive process and a multidimensional complex phenomenon that can occur in different contexts and cannot be summarized in a simple or a single explanation (Merriam, 2008). Adults learn in different ways according to their varying experiences and backgrounds. A suitable way, method, or theory for some may be unsuitable for others, although the same topic is being learned. (Merriam, 2001).

The most popular adult learning theories are andragogy, Self-Directed Learning (SDL), and Transformational Learning (TL). Andragogy is the science and art of helping adults learn. Andragogy is based on a set of assumptions about adult learners. These assumptions are as follows: (Smith, 2002):

- Adults mature and can direct their own learning. They can move from being dependent to being self-directed.
- Adults use their accumulated life experiences to help themselves learn.
- Adults are ready to learn when they have or will have a new social or life position.
- Adults usually want to apply their new experiences or newly acquired knowledge immediately.
- Adults have internal motivations to learn rather than external ones

SDL is the process in which adults can start learning without outside help. Adults can decide what to learn, how to learn, and when to learn; they can also evaluate what method of learning is suitable for them (Smith, 2002). Adults can choose the content and the material that fulfill their needs and develop new knowledge or skills for them. Adults take the initiative to learn, and such initiative reflects positively on their learning because they choose what to learn instead of being forced to learn something. SDL places emphasis on the learner than on the teacher; adults can choose whether to learn a new topic. Malcolm Knowles integrated the idea of self-direction in a five-step model. This model includes identifying learning needs, formulating learning needs, identifying resources and materials for learning, choosing the suitable learning strategies and implementing them, and evaluating the learning outcomes (Smith, 2002).

In TL, learning changes the ways in which individuals think and observe their world and themselves. Adults' metacognitive reasoning allows them to assess reasons and formulate arguments to support their opinions or beliefs. The reasoning process may consist of skills, tacit knowledge, and competencies (Mezirow, 2003). For TL to occur, adults must have the ability to critically reflect on different issues and engage in rational discussions. Critical reflection and rational discourse represent high levels of cognitive functioning (Merriam, 2004).

According to the different adult learning theories (Andragogy, Self-Directed Learning (SDL), and Transformational Learning (TL)), adults have the ability to decide what to learn, how to learn, and when to learn. All learners in this study are adults with different experiences and backgrounds. The developed multimedia courseware is designed in a way that enables the learners to choose their preferred way and strategy to learn the pronunciation of the RACs. The developed multimedia courseware is designed in such a way that it does not follow the linear or waterfall approach which enforces the learners to follow a specific way of learning, but rather, each learner can choose the letter that they prefer to start with and the type of practice they prefer to use; like two letter or three letter words, or a combination of all the previous techniques. Learners can evaluate and critic themselves based on the expert's sounds available in the multimedia courseware, and their recorded sounds during their practices. Learners can also watch the animation of the tongue movement to produce the different sounds of the RACs, or can listen only to the expert's sound based on the learners' preferred strategy and way of learning.

1.7.2 Kolb's Experiential Learning Theory (ELT)/ Learning Construct

David Kolb proposed ELT in 1984. According to Kolb, a person's learning depends on nature and nurture, that is, a person's inborn characteristics along with his or her environment determine his or her style of learning. Kolb also argued that the two elements of learning are acquiring experiences and transforming experiences into knowledge (Schellhase, 2006). Kolb's ELT includes three development stages, namely, acquisition, specialization, and integration (Schellhase, 2006).

- Acquisition: This stage is very similar to that in Piaget's four stages of development. This stage takes place from birth to adolescence. Basic abilities develop at this stage.
- Specialization: This stage is the period of education and career development. Kolb believed that the environment shapes a person's characteristics and learning styles. The educational environment and the experiences of individuals during this period help them develop their identities.
- Integration: This stage is the period between a person's middle years to his or her later life. During this stage, people use their learning styles in their daily activities and careers. People try to reach self-actualization, but not everyone achieves such objective. Kolb's ELT presents a four-stage cycle of learning, as shown in Figure 1.1

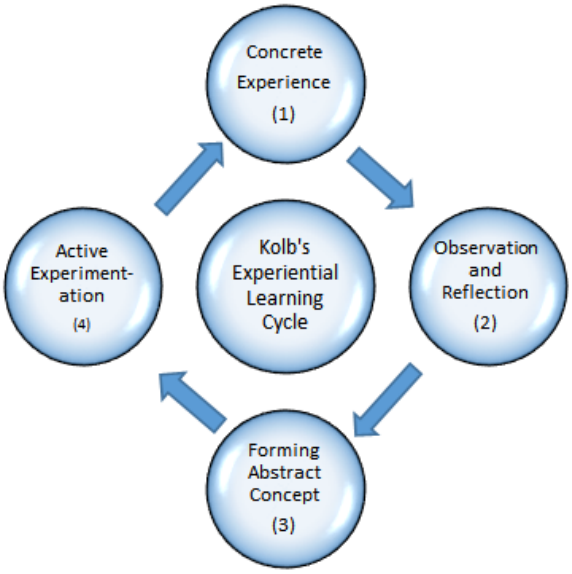

Figure 1.1 Kolb's ELT (1984).

These four stages represent how experiential learning occurs (David A Kolb, 1984); (McCarthy, 2010).

- Concrete Experience (CE): This stage is the "doing" component. The ELT model states that learning requires a few learning abilities. Learners must decide which learning ability to use in a particular situation. Certain learners acquire knowledge and information through concrete experiences and activities. They use their senses and feel what they experience.
- Reflective Observation (RO): This stage includes the analysis and judgments of events. Learners consciously reflect back on their experiences, that is, learners immerse and reflect themselves on their experiences.
- Abstract Conceptualization (AC): In this stage, learners proceed to the conceptualization of what they observe. They process their ideas and integrate such ideas into logical theories. Thinking is the learning skill used in this stage.

- Active Experimentation (AE): Learners try to use their reasoning abilities in the final stage. They apply what they have learned in the previous stages. Thus, they must develop a comprehensive understanding to test the implications of what they have applied in new situations.

The four-stage cycle of Kolb's ELT starts with the use of the senses and feelings, followed by engaging in and reflecting on experiences, integrating ideas into logical theories, and finally using and applying what has been learned in the previous stages. These stages are very similar to the methods used by learners in learning their mother tongue. Learners first use their senses to identify or hear a word. Then, they repeat this word and obtain feedback from their parents. Next, learners evaluate and finally try to pronounce this word again correctly.

In this research, the learners used the developed multimedia courseware and their senses to watch how the tongue moved inside the mouth and to hear the proper way of pronouncing the RACs. This stage represents the concrete experience to them. From this stage, the learners analyzed the correct way of pronouncing the RACs, how the tongue moved to create certain sounds, and the specific source of these sounds. The learners created and formed their own logical ideas or theories about the proper way of pronouncing the RACs, as well as their own conceptualizations of what they had watched and heard on the basis of their experiences. In the last stage, the learners attempted to apply what they had learned in the previous stages and to pronounce the RACs correctly or in an acceptable way.

1.7.3 Mayer's Cognitive Theory of Multimedia Learning (CTML)

When a learner uses multimedia, he or she engages in three cognitive processes. The first process is selection, which is related to receiving verbal and visual information based on texts and images. The second process is organization, which is applied to the words and images to create a verbally based model and a visually based model of the to-be-explained system. The third process is integration, which occurs when the learner creates or builds a relationship and a connection between the verbally based model and the visually based model. According to dual coding theory, a learner has two systems: the verbal system, which processes verbal information, and the visual system, which processes pictures and animation (Sorden, 2012).

According to Mayer's CTML (Figure 1.2), the human memory has two channels that deal with and process information: the auditory channel and the visual channel. Learners have eyes and ears that represent the input devices of the human memory. Each channel has limited capacity. Thus, humans can only deal with a limited amount of data at a time. Learning is an active process that depends on filtering, selecting, organizing, and integrating information.

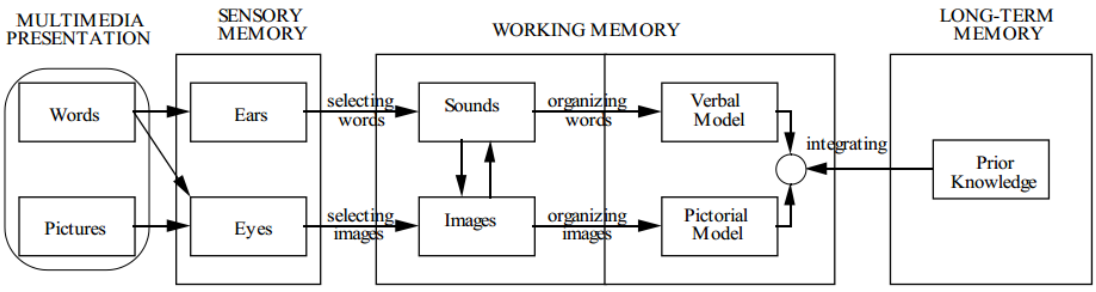

Fig 1.2 Mayer's cognitive theory of multimedia learning (Mayer & Moreno, 2003)

Mayer also discussed the role and importance of the different types of memory, namely, short-term memory, working memory, and long-term memory. The short-term memory receives visual information such as pictures and verbal information such as words and then stores them for a limited time. The working memory processes and organizes words and images to create a mental construction. The long-term memory represents the knowledge or the learning experience that is gained through the integration between the verbal and visual models (Mayer & Moreno, 2003).

Mayer's theory concentrates on the important use of multimedia as a tool for learners to learn new knowledge. The multimedia courseware developed in the present work considers the five major principles that should be followed to provide learners with an effective learning experience. The multimedia courseware uses sounds, pictures, text, and animation to teach the pronunciation of the RACs and to make the learning process as simple, easy, and useful as possible. The learners in this work used their two memory channels, namely, the auditory and visual channels, to learn the RACs. They then chose the letters, listened to the sounds, observed the correct way of pronouncing the letters, and repeated the pronunciation as form of practice.

Mayer's CTML is used as basis in developing the multimedia courseware in addition to Allessi and Trolip's (2001) model. The learners in this study are instructed to use the developed multimedia courseware to teach themselves the proper or acceptable way of pronouncing the RACs.

1.7.4 Bandura's Social Cognitive Theory

Bandura's social cognitive theory concentrates on how cognitive, environmental, behavioral, and personal factors work and interact with each other to identify human behavior, functioning, and motivation (Bandura, 1986). This theory consists of four goal realization processes, namely, self-observation, self-evaluation, self-reaction, and self-efficacy. Self-observation is observing the progress of behavior toward achieving a goal. Self-evaluation is comparing someone's current performance toward a target goal or the desired performance. Self-reaction refers to the reactions of individuals who can be motivated. Self-efficacy is a person's belief in his or her own capabilities to achieve a goal (Bandura, 1991).

The learners used self-evaluation to compare their pronunciation of the RACs to the expert's pronunciation in the multimedia courseware. Learners recorded their pronunciation by using the Camtasia Studio software. Learners evaluated their pronunciation by listening to their recorded pronunciation and comparing it to the expert's pronunciation. The self-evaluation process enabled the learners to improve their level of pronunciation by comparing their pronunciation with the expert's pronunciation, which reflected on their final performance.

Learners, especially adults who cannot find enough time to attend classes and lessons, use the self-learning method to learn different subjects, skills, or second languages. The self-learning of a second language is the process in which the learner takes the full responsibility for his or her learning. The learner should identify his or her own objectives and goals, select the proper material, choose the suitable strategy

and method to learn, monitor his or her learning process, and evaluate what he or she has gained and acquired (Holec, 1979).

This research deals with adult learners who have different experiences and backgrounds. Agreeing to be part of this research means that the adult learners have the desire and ambition to learn or gain a new experience in their lives. The different backgrounds and experiences of the learners determine what strategy each learner may use to learn the pronunciation of the RACs. All the learners in this study employed self-learning with self-evaluation to learn the RACs and utilized their own strategies to teach themselves how to pronounce the different sounds. Given that all the learners were adults, choosing which method, strategy, or theory to use to teach themselves was left to them. The developed multimedia course was made available on their computers, and they could decide when and how to use the courseware to teach themselves the pronunciation of the RACs. The learners were left to manage the whole learning process.

1.8 Limitations of the study:

- This study was limited to the faculty and staff members of the Fujairah Colleges who are learning Arabic as a second language.
- Four learners were chosen on the basis of a random purposive sample given that this research used the case study approach.
- The nine Arabic letters or sounds chosen are the letters that do not match any other sounds in the English language.

- All the learners were required to use the developed multimedia courseware as the only resource to learn the pronunciation of the RACs.
- The researcher has no control over the decisions of the learner if they seek to utilize other multimedia resources, courseware or help from other experts.
- The role of the teacher was limited to training the learners on how to use the developed multimedia courseware and the Camtasia Studio software to record their practice exercises.
- The learners' practice time was 10 to 11 minutes for each of the nine letters, and they were required to record every second of their practice exercises.
- All the learners completed a pretest and posttest before and after their training, respectively.